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## TOWN OF NEWTOWN

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### Land Use Agency

November 27, 2017

32 Riverside Road (Sac Field)  
Sandy Hook Permanent Memorial Site  
Pond Study

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The purpose of a water quality report is to determine the current water quality of the pond by identifying its trophic status. Trophic status refers to nutrient levels and the productivity (the amount of plant and animal growth in the pond). A pond that is “clean” low in nutrients, productivity and has good water clarity is called oligotrophic. A pond with high nutrients, excess productivity and poor water quality is called eutrophic, while a pond between these two stages is mesotrophic. A less common category of ponds is dystrophic, which has acidic pH, high nutrients, with low productivity and a tea or tannic color.

Pond One (the eastern-most pond) and Pond Two, to its west, are tannic and dystrophic, meaning very acidic (6.5 and 6.7 Ph), tea-colored ponds. It is believed that the ponds occurred during excavation for gravel in the 1930s when the digging reached the ground-water level. Their color and acidity are attributed to the lack of flow in and out, as well as the quantity of leaves and other organic matter that decompose in the water. The nutrient levels in the water are relatively high because there are few organisms present that would utilize the phosphorus and nitrogen. The ammonia levels are relatively high due to low levels of oxygen in the water, Pond 1 is approximately 3.4 meters deep while Pond 2 is approximately 2 meters deep.

Although a fish survey was not done, no fish were observed during the water sampling effort. However, there were many birds noted, which indicates a relatively healthy ecosystem.

Aquatic plants noted were few: spineless hornwort and coontail. There is sparse plankton present. The bright-green plant growth on the water surface is duckweed, which could be minimized by installing circulator pumps in the ponds. One reason for the paucity of aquatic plants is the lack of light reaching the pond bottoms. Likewise, there are few emergent aquatic plants (those normally found at a pond’s edge), due to the acidity of the water. Thus, terrestrial plants have colonized up to the water’s edge.

Pond One has an old diving board, evidence of bank stabilization, and an outflow pipe, all of which were evidently installed to make this pond useful for recreational purposes. The pipe is now filled in but could be restored.

There is an existing network of trails around the ponds, and with some clearing of dead trees and brush, accessibility to the ponds could be improved. Existing swales adjacent to the ponds allow for outflow during times of high water level.

## Water Quality Data

<b>(Sac Field) Memorial Site Pond Water Quality Data - October 20, 2017</b>							
	Temperature °C	pH	Turbidity (NTU)	Conductivity (uscm)	e Coli (Col/100ml)	Secchi Disk (meters)	
<b>Eastern Pond (1)</b>	11.2	6.5	0.36	33	22	0.5	
<b>Western Pond (2)</b>	11.6	6.7	0.91	61	74	0.4	
	Alkalinity (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Phosphorus (mg/L)
<b>Eastern Pond (1)</b>	< 20	4.0	ND	1.76	< 0.5	< 0.1	0.14
<b>Western Pond (2)</b>	< 20	5.8	2.7	2.02	< 0.5	< 0.1	0.08

## Bathymetry Map

